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ABSTRACT

The purpose of this study was to examine the general proposition that different maternal child-rearing pattern-types (permissive or restrictive) are associated with high scholastic achievement in elementary school children from four different class-culture groupings (black middle-class, black working-class, white middle-class, and white working-class). The groupings were further subdivided by sex in order to account for the effect of each child's sex on the relationship between child-rearing and achievement in the different groupings. Information on child-rearing, as well as on parental occupations (used to determine the social class levels) was obtained from 1,102 mothers by means of survey interviews. Children's scholastic achievement was measured on standard school achievement tests taken from school records. Results, while providing support for the above general proposition, provided only partial support for two specific hypotheses proposing that urban black mothers of high achievers use warm and restrictive strategies, and that white middle-class mothers of high achievers use warm and non-restrictive strategies. The effect of the child's sex on maternal child-rearing strategies are discussed. (Author/MP)

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Scholastic Achievement in Different Groups

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Abstract

This survey interview study investigated relationships of child-rearing strategies of 1102 urban mothers of eight different class-culture-sex (of child) groups to grade school achievement test scores of their children. Child-rearing data were reduced to a single categorical typology of strategies. A general hypothesis that different strategies relate to high achievement in different settings was supported, and specific hypotheses that urban black mothers of high-achievers use warm and restrictive strategies and white middle-class mothers of same use warm and non-restrictive strategies received partial support, demonstrating that contextual factors influence the relationship of child-rearing to achievement.

Maternal Child-Rearing Patterns and Children's
Scholastic Achievement in Different Groupings

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The purpose of this survey research study was to determine whether different maternal child-rearing patterns are associated with high scholastic achievement in fifth and sixth-grade children in different class-culture-sex groupings, in an attempt to suggest possible explanations for some of the many contradictory findings in the achievement socialization literature.

For example, numerous studies have found that maternal "warmth" tends to be positively related to achievement tendencies in children (Baldwin, Kalhorn, and Breese, 1945; Bayley and Schaefer, 1964; Busse, 1967; Conklin, 1940; Honzik, 1967; Jones, 1955; Kimball, 1953; Milner, 1951; Morrow and Wilson, 1961; Rosen and D'Andrade, 1959; Watson, 1957). Other studies, however, have found maternal "warmth" to be negatively related to achievement in children (Barwick and Arbuckle, 1962; Crandall, Dewey, Katkovsky and Preston, 1964; Drews and Teahan, 1957; Haggard, 1957; Stewart, 1950). Similarly, with respect to child-rearing variables that could be included in the general category "permissiveness," many contradictory findings have been reported. Reviews of many such findings can be found in Crandall (1963), Flavell (1969), Heckhausen (1967), Hess (1969), Logan (1972), and Zigler and Child (1968).

Most studies used variables that could be classified in either of two major child-rearing dimensions, namely "Warmth versus Hostility" and

"Permissiveness versus Restrictiveness" (Becker et al., 1962). Other factor-analytic studies have found highly similar but differently labeled dimensions (e.g., "Love" for "Warmth," "Strictness" for "Restrictiveness," etc.; Schaefer, 1959; Slater, 1962).

Apart from differences among studies in the operational definition and measurement of child-rearing and achievement variables, two possible sources of contradictions in findings interested this researcher. First, as Caldwell (1964) maintains, many studies fail to recognize that whether a given variable relates to children's achievement may depend upon how mothers behave in other areas of socialization that also bear on achievement. Heilbrun, Harrell, and Gillard (1967), for instance, found a positive relationship between maternal "affection" and children's achievement, but only when maternal "control" over children's activities was also high. There was, in other words, a pair-wise interaction between "affection" and "control."

Various kinds of standard multivariate analyses (e.g., multivariate anova) could be used to control for the influence of child-rearing variables on each other in relation to a dependent variable. A different and less complex approach, however, would be simply to deal with whole child-rearing patterns by reducing the constellation of child-rearing variables to a single categorical variable, each category composed of a different pattern of high and low levels on dichotomous child-rearing variables (e.g., #1: LLLLL, #2: LLLLH, etc.) The levels of achievement associated with these different child-rearing pattern-types in different groupings could then be determined. Such a strategy would amount to controlling for the

effects of all possible higher-order as well as pair-wise interactions among a set of child-rearing variables, although the magnitude of the various interactions could not be measured.

The second possible source of contradictory research findings concerns the effects of different contexts on the relationship between maternal child-rearing variables and achievement. Contextual variables of interest are:

1. Sex of child: Several studies have found that maternal child-rearing variables associated with high achievement tendencies are different for boys than for girls (Crandall, 1963; Crandall, Dewey, Katkovsky and Preston, 1964; Gill and Spilka, 1962; Rosen and D'Andrade, 1959).

2. Social Class: It is difficult to find hard evidence in the literature that SES differences influence the relationship of child-rearing variables to achievement. It seems reasonable to expect, however, that child-rearing practices that work in a middle-class setting might not always be successful in a lower-class environment. Winterbottom (1958), for example, found "early independence training" to be positively related to high achievement motivation in middle-class boys. But a child encouraged to be independent at an early age in the urban working-class might be subjected to experiences and to peer group influences that would militate against achieving highly in the more "middle-class" environment of school (Labov and Robins, 1969). The average middle-class child, living in a presumably more benign environment, might not be subjected to the same kinds of anti-achievement influences if "permissive" parents encouraged or allowed him to become independent at an early age. Conversely, a highly-controlling mother in a lower-class urban setting might be able to insulate her child from experiences detrimental to high achievement in school.

3. Culture: Cultural factors may also influence the relationship between child-rearing patterns and children's achievement. Consider two broad types of cultural traditions, both of which seem to have produced high-achieving children within the constraints of American society. The first might be termed the "Protestant Ethic" tradition, characterized in child-rearing by an emphasis on early independence training and learning from experience (McClelland et al., 1953). The second type might be termed the "Urban Minority" tradition. Urban minorities that have been notable over the years for producing children who tended to be high scholastic achievers namely Jews, Chinese, and Japanese, all share a history of lower-class urban life and apparently similar child-rearing patterns, involving protectiveness toward and control of children, keeping them close within the family circle rather than emphasizing early independence, and using shame and/or guilt-induction as a means of encouraging a child to become a high-achiever (Blau, 1966; Caudill and DeVos, 1956). These groups suggest the hypothesis that this particular style of child-rearing is well-adapted to raising urban lower-class children who do well in our schools.

This study thus examined the general proposition that different maternal child-rearing pattern-types are associated with high scholastic achievement in children of four different class-culture groupings (black middle-class, black working-class, white middle-class, and white working-class), the groupings being further sub-divided by sex in order to account for the effect of sex of child on the relationship of child-rearing to achievement in the different groupings.

More specific propositions were advanced for the black working-class and the white middle-class:

It was hypothesized that an "Urban Minority" child-rearing strategy consisting of some form of warmth and restrictiveness would be associated with high-achieving children in the urban minority group setting represented by the black working-class.

In the white middle-class, it was hypothesized that child-rearing pattern-types reflecting warmth and non-restrictiveness (permissiveness) would show a positive relationship to children's school achievement.

No predictions were made concerning the white working-class or the black middle-class, nor concerning any specific effects of sex of child on the relationship of child-rearing patterns to achievement in the various groupings.

Method

A four-cell design called for 300 middle-class black, 300 middle-class white, 200 working-class black and 200 working-class white mother-child pairs.² By means of census tract information on the socio-economic and racial composition of neighborhoods, a series of elementary schools was selected in Chicago and Evanston, Illinois, and Gary, Indiana. Special efforts were made in sampling to find schools having middle-class blacks and schools having working-class whites. Records of whole classrooms of fifth and some sixth grade children in these schools were microfilmed. Achievement test scores were taken from these records, and mothers of these same children were contacted for interviewing.

When interviewing had been completed, the sample consisted of the distribution of mother-child pairs by class, culture, and sex shown in Table 1.

Insert Table 1 about here

The black working-class and the white middle-class both proved to be over-represented, indicating that even the special sampling efforts were not sufficient to provide desired numbers of black middle-class and white working-class subjects. The slight over-representation of girls apparently reflects somewhat higher school attendance.

"Middle-class" subjects were all of those whose fathers (or mothers if fathers not in the home and mothers were employed) had occupations in any of the four following classifications of the U. S. Census: 1. Professional, 2. Managerial, Administrative, 3. Clerical, 4. Sales.

"Working-class" subjects were those whose fathers (or mothers, as above) had occupations falling in one of the five following census classifications: 5. Skilled workers, 6. Semi-skilled workers, 7. Private household and service workers, 8. Farm laborers and foremen, 9. Unskilled laborers.

Information on child-rearing, as well as on parental occupations for determining individual social class levels, was obtained by means of a survey interview administered by professional interviewers from the National Opinion Research Center in Chicago. Interviewers were matched by race with interviewees. Some 1350 mothers were contacted, and of these, 1102 interviews (81 percent) were completed and coded. The interview took about one and one-half hours to administer, and contained, in addition to many questions not of interest here, some 50 questions pertaining to maternal child-rearing from which the maternal child-rearing variables were constructed.

The original 50 interview questions were first reduced by means of a principal components analysis and Guttman and Eikert scaling to 20 child-rearing variables. Some single interview questions remained among these 20 new variables. An extensive analysis of the relationship of these 20 variables to children's scholastic achievement was then carried out. Lack of space prevents discussing this phase of the analysis here.

Since to construct a series of child-rearing pattern-types comprising all possible high-low combinations of 20 variables would have produced an astronomical (2^{20}) number of pattern-types, a further principal components analysis was performed that yielded five reasonably coherent and discrete components from which five summary child-rearing variables were created. The results of this principal components analysis are presented in Table II. Boxes enclosing the highest loadings indicate those variables used in constructing, by weighting each variable by its loading and summing, the five summary variables. Loadings in italics are significant at $p < .05$ or better.

Insert Table II about here

The five final variables are described below in terms of those of the pre-existing twenty variables comprising each. These are broken down in turn into original interview items, except where one of the original interview items had survived as one of the twenty variables.

I. Punitiveness, composed of the weighted sum of:

A. Early Spanking, a single interview item: "When (child) was 3 or 4 and didn't mind you, how often did you spank him?...very often (4), fairly often (3), once in a while (2), hardly ever/never (1)."

(Responses on most other interview questions were similarly precoded on 4-point scales and are not described unless significantly different.)

B. Late Spanking, a single interview item: "How often do you [now] use the method of spanking or whipping?"

C. Severity of Toilet-training, a Likert scale combining three interview items: "When you were toilet-training (child), how often did you...(1) Spank him?, (2) Bawl him out?, (3) Shame him?"

II. Monitoring, composed of:

A. Control of Peer Interactions, a single interview item: "How much control do you [now] keep over whom (child) plays with?...a great deal, a fair amount, not much, no control at all."

B. Empathy, a Guttman-scaled variable (scalability 0.81, reproducibility 0.97) combining the following four interview items:

1. "How close would you say you and your child are these days?....very close, fairly close, not very close, not close at all."

2. "How easily can you tell when child is upset? (very easily, etc.)."

3. "How well do you feel you understand your child's feelings and thoughts? (very well, etc.)."

4. "How hard do you find it to talk to your child? (very hard, etc.)."

C. Knowledge of Peer Interactions, a single interview item: "Do you usually know who (child) has been playing with?...always, usually, sometimes, hardly ever/never."

III. Non-Physical Discipline, composed of:

A. Disagreement Re: Maturity, a single interview item: "How often do you and (child) have disagreements because he wants to do something that you think he is too young to do?"

B. Deprivation of Privileges, a single interview item: "How often do you use the [discipline] method of depriving (child) of something he wants, like TV, movies, candy?"

C. Criticism, a single interview item: "How often do you criticize (child) when he is not doing something as well as you think he should?"

IV. Positive Interaction, composed of:

A. Cognitive Stimulation, a Likert-type summation of three interview items: "[When child was young] how often did you . . . (1.) Read to (child) or tell him stories, (2.) Tell names of things you fed him or names of things around the house, (3.) Stop to answer (child's) questions?"

B. Warmth, a Guttman Scale (scalability 0.62, reproducibility 0.91) combining the following interview items:

1. "[When child was a baby] how often did you spend extra time playing or talking with (child) after feeding, bathing or changing him?"

2. "When (child) was about 3 or 4 and lost his temper, what would you do?
1 = spank, 2 = scold, 3 = send to room, 4 = ignore, 5 = talk to him."

3. "Some mothers think that if you give a baby a lot of time and attention, it will probably spoil the baby. Do you agree or disagree? (1 = too much attention definitely spoils child, 2 = attention doesn't spoil, but isn't best, 3 = unsure whether spoils, unsure whether best, 4 = attention does not spoil, and might be best, 5 = a great deal of attention definitely best for child.)"

C. Taking Child Visiting, a single interview item: "[When child was 3 or 4] how often did you take (child) visiting, shopping, or on errands with you?"

V. Verbal Restrictiveness, composed of:

A. Restrictions on Physical Mobility, a single interview item: "[When child was 3 or 4] how strict were your rules about how far (child) could go from the house when he/she played outside? . . . very strict, fairly strict, not very strict, no rules at all."

B. "Verbal" Discipline, a Guttman Scale (scalability 0.77, reproducibility 0.97) composed of three interview items: "When (child) [now] does something wrong, how often do you . . . (1.) Explain to (child) why you disapprove?, (2.) Tell (child) how disappointed you are?, (3.) Send (child) to his room?"

Rotation to two principal components revealed that the items that loaded on the Positive Interaction, Punitiveness, and Non-Physical Discipline components would tend to fit a "Warmth versus Hostility" dimension, and the items that loaded on the Monitoring and Verbal Restrictiveness components would tend to fit a "Permissiveness versus Restrictiveness" dimension. This is not surprising, as many of the original interview items were adapted from questions used by earlier investigators. However, only a simplistic four-category typology (Warm and Permissive, Hostile and Permissive, Warm and Restrictive, and Hostile and Restrictive) could be generated from two dichotomized components, so the five variables were kept, allowing discussion of various types of "Warm and Permissive," etc., styles. In the construction of the pattern-types, each of the five variables was dichotomized at its median.

Scholastic achievement was measured by scores on standard school achievement tests taken from school records. Since the three school systems used different achievement tests, except for one supplementary test common to some children in all cities, theoretically comparable standardized scores were constructed using the national norm mean and standard deviation for each test.³ These scores were then converted to stanines, standard scores with a mean of 5 and standard deviation of 2. To check on the comparability of these scores, the tests were compared using the supplementary test as an "anchor." A survey was also made of published studies that have compared the tests in question. Both of these procedures found high comparability among the tests.

One possible shortcoming of tests of school achievement is their questionable validity as measures outside of the white middle-class. This issue is perhaps not critical here, however, as achievement test scores were used to determine differences in school achievement only within each of the eight sub-groups of the sample, and not to compare members of one sub-group with members of another, albeit test scores may still partly reflect the extent to which a child is "into the system" (cf. Labov and Robins, 1969).

Results

In each sub-group it happened that there were one or two variables that could be high or low and make no difference to children's achievement when in combination with the other variables. Such variables were therefore labeled "null" and pattern-types were collapsed. Since a different variable (or variable) tended to be "null" in each sub-group, resulting pattern-types in each tended to be made up of a different three or four of the variables. While making comparison across sub-groups less than elegant, this revolving three- or four-variable typology did reduce the number of pattern-types from $2^5=32$ to $2^4=16$ or $2^3=8$, thus increasing the N potentially associated with each pattern-type.

Although it meant awkward analysis, the possible "ecological validity" of this finding should be emphasized. It suggests that one influence of sub-group context is to constrain child-rearing such that only certain variables in combination with each other are important for children's achievement in each context, other variables being simply "noise." This result, somewhat analogous to finding that certain variables have not entered a multiple regression equation, in fact tends to support the primary hypothesis. However, it was not anticipated that pattern-types would be "different" in different groupings by virtue of being composed of different variables, but rather of different patterns among the same variables.

Table 3 is a summary table that presents, of the numerous maternal child-rearing pattern-types in each sub-group, only those associated with mean children's achievement scores far enough above the average of the rest of the sub-group yield $p < .10$ by t -test. These scores are expressed in number of stanines above each sub-group average.

The pattern-types presented in Table 3 are arranged such that the first three variables (Positive Interaction, Punitiveness and Non-Physical Discipline) represent the more general dimension "Warmth vs. Hostility" and the last two (Monitoring and Verbal Restrictiveness) represent "Restrictiveness."

Insert Table 3 about here

In the text, the pattern-types are referred to in abbreviated form. The first one in Table 3, for example, becomes: HLN LH.

The Urban Minority Hypothesis

The pattern-type associated with the highest level of achievement for black working-class boys (#4: HLNNH, $p < .05$) does fit the general description "warm and restrictive" (High Positive Interaction, High Verbal Restrictiveness), offering some support for the Urban Minority hypothesis.

The maternal pattern-type associated with highest achievement for black working-class girls (#5: NLLLN, $p < .10$), could best be described as "warm and non-restrictive," not supportive of the Urban Minority hypothesis but instead suggesting the White Middle-Class strategy. This finding was not significant by usual standards, however.

Perhaps the hypothesized Urban Minority strategy is associated more with high-achieving sons than daughters in an urban minority group situation.

This interpretation may be somewhat strengthened by the unexpected finding that another "warm and restrictive" pattern-type (#1: HLNLH, $p < .10$) was associated with the highest achievement for black middle-class boys as well. This finding was not highly significant, however.

Other pattern-types that could also be termed variants of the "Urban Minority strategy" were among pattern-types associated with high achievement for black middle-class girls and white middle-class girls. For white middle-class girls, for example, such a pattern-type (#9: HNLHH, $p < .025$) was one of two related to high scholastic achievement at $p < .05$ or less. In this case both Monitoring and Verbal Restrictiveness were high, indicating that a "warm and highly restrictive" strategy may be one way to raise a high-achieving daughter within the urban white middle-class.

Among black middle-class girls, another variant of the hypothesized "warm and restrictive" Urban Minority strategy (#3: HNLHL, $p < .01$) was one of two maternal pattern-types associated with high children's achievement.

There was a tendency, then, for the hypothesized Urban Minority strategy to appear more among blacks than whites in association with high achievement.

The White Middle-Class Hypothesis

Among white middle-class mothers of boys the most frequently occurring pattern-type significantly associated with high achievement (#8: HLLLN, $p < .005$) fits the general description "warm and non-restrictive," supporting the White Middle-Class hypothesis.

Among white middle-class mothers of girls, the most frequently occurring pattern-type associated with high achievement (#10: HNLLL, $p < .0005$) was also a form of "warm and non-restrictive" child-rearing strategy.

In both of the white middle-class sub-groups, however, a "White Middle-Class" pattern-type was not the only apparently successful one, nor was the white middle-class the only place where this type of strategy tended to appear in association with high achievement. Pattern-types fitting the same general description also occurred in mothers of both sexes in the white working-class, and among mothers of girls in the black middle- and working-classes, the latter instance having already been described. In fact, the only sub-groups in which some type of "warm and non-restrictive" strategy did not show any tendency to relate to children's high achievement were black middle- and working-class boys, the two groups where Urban Minority pattern-types appeared.

Among white working-class mothers of boys, for example, a "warm and non-restrictive" pattern-type (#1: HLLNL, $p < .10$) was the only one tending to be associated with high achievement. This was not a highly significant relationship, however.

For white working-class girls, a pattern-type that also appears "warm and non-restrictive" (#13: NLLLL, $p < .10$) was one of two tending to relate to high achievement, but again was not highly significant.

Among mothers of black middle-class girls, a variant of the "White Middle-Class" pattern (#2: HNLLL, $p < .05$) was one of two achievement-related pattern-types. While exhibited by only two of 92 mothers in the sub-group, it was associated with a mean achievement score 2.54 stanines above that sub-group's average. This fact, plus an extremely small variance (0.32) between the two individual scores, made that difference significant at the $p < .05$ level. Chance factors still cannot be ruled out with such a small N, of course. This finding does suggest, however, that even though this "White Middle-Class" pattern was barely exhibited in this sub-group, it might prove adaptive if it were more frequently used.

The most highly significant findings for the hypothesized white middle-class patterns did occur in the white middle-class groupings, thus supporting the second specific hypothesis.

Other Findings

Some of the other apparently successful pattern-types might represent additional types of maternal child-rearing that have previously been described in the literature.

Pattern-type #6 (HHLLN, $p < .05$) for white middle-class boys was the only one tending to be associated with high achievement in any sub-group in which both high Punitiveness and high Positive Interaction occurred together, thus disallowing the characterization "warm." This strategy, while appearing successful, may constitute a type of emotional "double-bind" in which a child is both indulged and coerced into doing well. One is tempted to speculate that such a strategy would be rarely used because it produces highly achieving but neurotic children.

Another pattern-type associated with high achievement in this sub-group (#7: HLHHN, $p < .05$) is the only apparently successful one in the whole sample in which high Non-Physical Discipline and high Positive Interaction occur together. This, together with high Monitoring, suggests moderate "strictness," indicating that this pattern-type might represent the "authoritative" child-rearing style that has been described by others as associated with achieving tendencies (Bing, 1963; Baumrind, 1966).

The one remaining pattern-type in Table 3 represents perhaps the most surprising finding of all. Although one form of a "White Middle-Class" pattern was weakly associated with high achievement for white working-class girls, another pattern-type was associated with an even higher level of achievement for this

sub-group (#12: NHHHL, $p < .01$). This pattern-type, the only "successful" one in which high Punitiveness, Non-Physical Discipline, and Monitoring all occur together, suggests that one way for a white working-class mother to raise a high-achieving daughter is to use exclusively coercive and controlling ("authoritarian") methods. This finding recalls those by Crandall et al (1964), Drews and Teahan (1957), Stewart (1950), and others who variously reported that "authoritarian," "rejectant," or "punitive" maternal child-rearing practices were associated with high achievement in children. Crandall et al found this for girls, but not for boys, just as in the present study. One might speculate that a cultural preference for this pattern of child-rearing has been tapped in this largely Roman Catholic, second- and third-generation European urban working-class group.

Discussion

This study has found partial support for two specific hypotheses. The two hypothesized types of child-rearing strategies, while not appearing precisely as predicted, did tend to appear in nearly complementary distribution in their predicted groups. The Urban Minority hypothesis received some support in the case of high-achieving black working-class boys. There was also a weak suggestion that an Urban Minority pattern is most successful for black middle-class boys. It is interesting to note that, for both of these groups, mothers of high scholastic achievers were high on the more "restrictive" of the control-type variables (Verbal Restrictiveness). The fact that this finding applies to sons more than daughters, and that apparently the restricting of activities rather than simply monitoring them is involved, suggests that mothers may have to make a greater effort to keep their sons from having anti-school-achievement

experiences than their daughters, perhaps because boys are more likely to spend time "on the street" than girls are if they are not actively restricted (Labov and Robins, 1969).

The suggestion that the hypothesized Urban Minority strategy works better for boys than girls is also interesting in the light of the anecdotes and sons-and-mothers humor created by some urban minority groups stressing the strong role played by mothers in the success of their sons (Blau, 1966; Greenburg, 1964).

The findings also suggest that one way to raise a high-achieving child of either sex in the white middle-class is to be, as predicted, in some fashion "warm and non-restrictive." However, pattern-types that also fit such a general characterization, although differing in specifics, tended to be associated with high children's achievement in other settings, suggesting that the adaptiveness of such a strategy may not be limited to the white middle-class. However, in none of these other groups were the relationships of as high a level of significance as they were in the white middle-class, ($p < .005$ and $p < .0005$). In fact, in only one other group (black middle-class girls, #2) did the p-level reach .05, and that case was questionable for other reasons, as already indicated. Similarly, still other pattern-types, which do not fit the "White Middle-Class" characterization, were also associated with high achievement in both middle-class groups. There may be, therefore, more than one way to raise a high-achieving child in the white middle-class, some being quite different from the hypothesized type of strategy.

In two sub-groups, white middle-class girls and black middle-class girls, both general categories of pattern-types appeared in association with tendencies toward high achievement, underscoring the fact that two or even three quite

different pattern-types tended to be associated with high achievement in some sub-groups. This finding suggests that the strength of environmental constraints on how one may raise a high-achieving child may vary from sub-group to sub-group, stringent conditions in some determine that only one strategy is adaptive, while circumstances in others provide more leeway for the raising of high achievers. Also, it may be easier for parents to know and choose the most adaptive child-rearing styles in some sub-groups than in others.

Many further observations, too many for a brief paper, could be made. For an example, among all of the different pattern-types in Table 2, while one or two might be considered "hostile and restrictive" (cf. white working-class girls), no pattern-type that could be labeled "hostile and non-restrictive" showed a tendency to be associated with high achievement, suggesting that the lowest common denominator of achievement socialization is simple involvement, a "hostile and non-restrictive" pattern representing the most non-involved type of child-rearing.

Although pattern-types were classified into more general categories for purposes of discussion, the specific "successful" pattern-types were virtually always different from grouping to grouping, thus supporting the general hypothesis and demonstrating the influence of contextual variables (class, culture, and sex) in their various combinations on the relationship of child-rearing to achievement. Thus, different "styles" of child-rearing may produce the "same" result in different contexts, suggesting that disparate findings among previous narrow-sample studies may be due to each having tapped a different one or two of these diverse styles. The fact that quite different pattern-types showed relations to high achievement within settings, and that these findings were quite different from what would have been predicted from my (non-reported) zero-order findings,

indicates the presence of interactions among the child-rearing variables such that the effect of one variable does depend on the levels of other variables.

The findings from this study must of course be considered suggestive, as they are subject to the many qualifications that affect survey interview data and the method of analysis used. For instance, it can only be an assumption that the child-rearing pattern-types were antecedent to and not a consequence of children's achievement levels. Further, as Yarrow (1964) has demonstrated, mothers' retrospective accounts of their child-rearing may be influenced by social desirability or by assimilation to an ideal form, and may not be entirely valid. On a related point, it cannot be determined with certainty that the mother's responses, and hence the pattern-types, reflect their actual practices and not their attitudes and beliefs. However, the pattern-types may still tell something about what "kinds of mothers" have high-achieving children, even if the level of reality tapped by the pattern-types cannot be determined precisely.

The analysis of choice in this type of study might ordinarily have been a multivariate analysis of variance, which would have produced measures of significance of all of the 2-way, 3-way . . . 8-way interactions among the five child-rearing variables and class, culture and sex. Besides being extraordinarily complex, however, this procedure proved impossible, as many combinations of variables yielded empty cells. Thus the admittedly less sophisticated and less informative t-test technique was used.

The use of a t-test analysis raises the question whether the number of significant tests could have occurred by chance. In fact, the number found here could have occurred by chance between five and ten percent of the time. On this basis, some might feel that random factors cannot be ruled out. However, these findings were not fished from a matrix and interpreted post-hoc

but were sought on the basis of guiding hypotheses to which they do seem to conform, and in addition the findings seem plausible on the face of it, and they also seem to relate meaningfully to the findings of other researchers.

The results of this study suggest that if systematic account were taken of the differing contexts in which child-rearing occurs, and that if the influence of the total constellation of child-rearing variables acting together were accounted for, future researchers using yet more rigorous methods might be able further to systematize our knowledge of how maternal child-rearing relates to children's achievement.

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NOTES

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²The larger number of middle-class subjects was intended to allow other project researchers to compare the child-rearing of recently arrived and established middle-class families.

³Formula:

$$\text{Standard Score} = \frac{\text{Ach. Test Score} - \text{National Norm Mean}}{\text{National Norm S. D.}}$$

TABLE I

Sample Distribution by
Culture, Class and Sex

Culture and Class	Sex of Child	
	Boys	Girls
Blacks		
Middle-Class	91	104
Working-Class	178	206
Whites		
Middle-Class	169	204
Working-Class	74	76

Loadings of Twenty Variables on
Five Principal Components (Varimax Rotation)

	<u>I.</u> <u>Punitive-</u> <u>ness</u>	<u>II.</u> <u>Monitor-</u> <u>ing</u>	<u>III.</u> <u>Non-Physi-</u> <u>cal Disci-</u> <u>pline</u>	<u>IV.</u> <u>Positive</u> <u>Inter-</u> <u>action</u>	<u>V.</u> <u>Verbal</u> <u>Restric-</u> <u>tiveness</u>	<u>Commu-</u> <u>nali-</u> <u>ties</u>
Early Spanking	-0.65	.00	-.12	-.03	.11	.45
Severity of Toilet Training	-0.64	.03	.07	-.02	.04	.42
Late Spanking	-0.54	.12	-.24	.10	-.00	.37
Punishment for Peer Grades	-0.43	.25	-0.42	.04	-.11	.44
Affectionateness	.42	.20	.07	-0.38	-.01	.37
Tolerance	.41	-0.40	.18	-.22	.06	.42
Control of Peer Interactions	-.25	.58	-.08	-.02	.08	.41
Empathy	.08	.55	.16	-.13	.01	.35
Knowledge of Peer Interactions	.30	.54	.03	-.27	-.22	.50
Regulation via Rules	-.11	.53	-.24	.08	.14	.38
Openmindedness	.06	-0.39	-.22	-.26	-.17	.30
Disagreement re: Maturity	-.02	-.04	-0.65	-.07	-.16	.45
Deprivation of Privileges	-.16	.09	-0.53	-.14	.26	.40
Criticism	-.25	-.05	-0.51	.06	-.02	.33
Withdrawal of Love	-.00	-.04	-0.46	.21	.13	.28
Cognitive Stimulation	-.14	.12	.16	-0.63	-.15	.48
Warmth	.24	-.16	.03	-0.62	.14	.49
Taking Child Visiting	-.00	-.00	-.04	-0.53	.07	.29
Restrictions on Physical Mobility	-.09	.08	.05	-.10	.77	.63
Verbal Discipline	.04	.09	-0.46	.09	.52	.50
% of Matrix Variance Explained	10.0	8.5	9.2	7.7	5.8	(Total % = 41.3)

TABLE 3

Child-Rearing Pattern-Types Associated with
High Achievement in Each Sub-Group ($p < .10$ or less)

Groups	Pattern-types					Mean ^a Ach. Score	N	t	#
	Pos. Inter- action	Puni- tive- ness	Non-P. Disci- pline	Moni- tor- ing	V. Re- strict- iveness				
Black Middle- Class Boys (N=83)	H	L	Null	L	H	1.31	6	1.89	(1)
Black Middle- Class Girls (N=92)	H	Null	L	L	L	2.54	2	10.48*	(2)
	H	Null	L	H	L	1.02	11	2.78**	(3)
Black Working- Class Boys (N=171)	H	L	Null	Null	H	1.08	12	2.05*	(4)
Black Working- Class Girls (N=198)	Null	L	L	L	Null	1.10	8	1.76	(5)
White Middle- Class Boys (N=161)	H	H	L	L	Null	2.25	4	2.58*	(6)
	H	L	H	H	Null	1.20	5	2.67*	(7)
	H	L	L	L	Null	0.90	31	3.11***	(8)
White Middle- Class Girls (N=202)	H	Null	L	H	H	1.00	10	2.26*	(9)
	H	Null	L	L	L	0.98	31	4.36****	(10)
White Working- Class Boys (N=73)	H	L	L	Null	L	1.58	4	1.96	(11)
White Working- Class Girls (N=75)	Null	H	H	H	L	1.29	4	5.44**	(12)
	Null	L	L	L	L	0.94	5	1.90	(13)

^aMean children's achievement score associated with each pattern-type, expressed as number of stanines above each sub-group's average score.

^bSub-group totals, slightly smaller than in Table 1 due to missing data.

* $p < .05$

** $p < .01$

*** $p < .005$

**** $p < .0005$